EPA RESPONSES TO SENATOR ROCKEFELLER 'S OFFICE RE: WV CHEMICAL SPILL
JANUARY 27, 2014

Chemical information (other than health effects):

1. **What has EPA been able to determine about the composition of Crude MCHM?**

2. **What can EPA tell us about the latest development that a substance known as PPH was also held in the tank in addition to MCHM?**

3. **Your office stated that EPA will be independently testing the contents of the remaining tanks at Freedom Industries that. How quickly will these tests be shared with other agencies working to protect public health and environment?**

4. **What is the difference between PPH and PPH, stripped?**

Response: Analysis IS currently being conducted. This weekend, chemists and lab managers have formed a group to share information about the analysis of MCHM and PPH. The group participants include the National Guard, WV American Water, American Water Research, REI Consulting, DuPont, Dow, Matric, NIH, EPA R3 Lab and EPA ERT lab. The group is communicating by e-mails and conference calls.

5. **What is the water solubility of MCHM and PPH / PPH, stripped? We have seen conflicting reports on hydrophobic vs. hydrophilic**

9. **Could MCHM contain a long-chain polymer that might obscure the ability to detect other substances?**

Response: Many of questions posed can only be answered through laboratory study (e.g., municipal treatment process efficacy, consumer water purification product removal capabilities, fate and transport of the contaminant in distribution systems and premise plumbing). These studies would not be completed in a timeframe that would inform current response activities. However, they may be important for a comprehensive remedial approach to this site and to future responses to a release of an unknown contaminate.

4-methylcyclohexanemethanol is chemically classified as an alcohol. Although surfactant would not be chemical nomenclature in a proper sense, it does describe the end use of Crude MCHM in coal washing. The mixture of MCHM with the other constituents in the Crude probably yield a stable solution with the surfactant properties desired. Surfactants are molecules with hydrophilic and hydrophobic ends. The cyclohexane would be hydrophobic and the methanol group would be hydrophilic. The MCHM is not a long chain polymer.

The MSDS for Dowanol PPh glycol ether (propylene glycol phenyl ether CAS 770-35-4) states that it is hydrophobic which makes sense because of the short ether chain attached to the benzene ring. The second chemical is similar to PPh but is a dipropylene glycol phenyl ether, basically a

longer ether chain attached to a benzene ring. It may be more hydrophilic than PPh described as slightly soluble.

6. If the carbon filters at WV-American Water were compromised, would they have been sufficient to filter PPH?

Response: EPA defers to West Virginia American to respond.

7. As people try to flush their systems they want to know how these two chemicals behave. Do they cling to materials like glass or metal? Do they permeate plastic/PVC?

Response: EPA believes that, in general, VOCs, including MCHM, would not be expected to absorb to metal or glass; however, there is no definitive data for MCHM to support or refute this hypothesis. Furthermore, even if MCHM does not adsorb to metal, glass, or plastic, there could be interactions with deposits (e.g., biofilm, calcium carbonate, metal oxides, etc.) typically found on the inside surface of premise piping, which may have no effect, may reduce contaminant levels through biological or chemical action or may physically impede adsorption.

It would take a fairly lengthy study to determine if and to what extent this chemical would absorb to common pipe material, and subsequently desorb into the bulk water flowing through the contaminated pipe. We will continue to look at the available science to address these questions and work with the State, industry and researchers to provide additional information if requested.

8. Many constituents are still experiencing a strong MCHM odor and others have been seeing a residue (sometimes oily). Could you help to address the smell and residue issues that are affecting customers at the end of the water lines?

Response: EPA defers to WV Department of Health and Human Resources to respond. The Safe Drinking Water Act does not provide authority over odor.

Remediation:

1. We are hearing of new reports of spikes in MCHM levels in recent days. Have you heard these reports? Could this happening as a result of runoff from the contaminated site? If so, what is being done to prevent this other than the lined trenches?

Response: EPA and WVDEP are aware of increased levels of MCHM in recent days at the West Virginia Water Authority's water intake. The levels before and after the Water Authority's treatment, were below the health risk level of 1 ppm. Some of the leaked product infiltrated into the ground and is being transported to the edge of the site by subsurface water. This water has the potential to runoff of the site into the Elk River.

The facility has placed absorbent and skirted boom along the bank that was extended 20 feet horizontally beyond the previously placed boom. In addition, the facility is pumping water from

a sump upgradient to the secondary containment. We believe that capturing this water should decrease the amount of water running through the site that can potentially transport the MCHM/PPH mixture. Once the ice melts and the temperature increases, the water seeping from the river bank will potentially increase. At that point, we understand that additional boom will again be placed in the river.

2. **What timeline is appropriate for remediation of this type?**

Response: We expect that the timeline for this remediation of the spill would be from four to six months. The remediation will include dismantling of the three tanks, including the one that failed, and the concrete pad for the three tanks. Next, a thorough examination the subsurface soil to determine the extent of the subsurface contamination has started and will be expanded with the corresponding subsurface sampling. The facility is using the interceptor trench to capturing the subsurface contamination and plans to construct a French drain to increase the amount of captured water. However, the majority of the site is frozen and most of the holes/sumps dug inside the tank containment are frozen and cannot be pumped. The facility was able to dig a hole behind Tank 394 about three feet down and found only loose fill, not the expected gravel/compacted soil. The hole was to prepare for a planned vertical French drain that could vacuum product from under the tanks. The subsurface loose fill and brick debris make the planned French drain ineffective for recovering product. Other methods will now need to be considered. The extreme winter weather has and will continue to delay the remediation.

In addition, the subsurface soil investigation has been complicated by the large amount of water that is entering the site either from an elevated groundwater table or a suspected spring. The site is being inundated with subsurface water. This water has been difficult to control and intercept to redirect pass the facility. The future remediation will focus on the subsurface contamination. Until the subsurface contamination is completely controlled, some leachate from the site can mix with the river water, submerge and bypass the booms.

3. Are there any prior or ongoing concerns with the remediation that would cause EPA to exercise primacy? How/When would EPA determine that they should step in to managing this event?

Response: EPA has been working closely with WVDEP who has conferred with EPA at critical points in the ongoing remediation. Despite filing for bankruptcy, the company has shown a financial and technical willingness to proceed with the remediation and EPA is supporting WV as they oversee the facility's cleanup work. However, if the situation changed, EPA would be taking similar steps with the facility to ensure that the material is controlled and captured on-site. EPA would focus its response on the tank that released its contents and that part of the facility contaminated with MCHM and PPH. WVDEP's orders also include the emptying and dismantling of the other tanks on-site that were not involved with the release.

EPA may only become official involved in this event this event pursuant to the Comprehensive Emergency Response, Compensation, and Liability Act (or Superfund) if requested by the state of WV. If the facility could no longer finance the work, EPA may conduct the cleanup using (taxpayer) funds from the Superfund program.

Looking Forward:

1. Following Senator Rockefeller's request to begin a long-term study on the health effects of these chemicals, in conjunction with the CDC, what are your next steps?

Response: EPA is working with CDC to address this request.

2. It is our understanding that EPA, along with OSHA, Department of Labor and others, will be looking at bulk chemical storage and transport on a national level. Has this process begun?

Response: Under the President's Executive Order 13650, the agencies are currently looking at ways to improve chemical facility safety and security nationwide. Under the Emergency Planning and Community Right-to-Know Act (EPCRA), facilities are currently required to report to the state, the local communities and the fire departments any hazardous chemical at 10,000 lbs or more.

3. Was EPA supplied a copy of the 2002 study (as part of the Safe Drinking Water Act) that identified Critical Zones of Concern? And do you have any recommendations for protections?

Response: EPA Region 3 was provided a copy of the report by WV Department of Health and Human Resources and the facilities source water protection activities report.